CLAIMS:

1. An apparatus for measuring electrical conductivity in a material, said apparatus comprising:

a pair of electrically conducting elements for contacting the material;

a first electrical conductor coupled to said electrically conducting elements, said first electrical conductor coupling a first transformer core and a second transformer core to form a first current loop; and

a second electrical conductor of known resistance coupling said second transformer core and a third transformer core to form a second current loop.

2. The apparatus of claim 1, wherein said electrically conducting elements are bolts or plugs or plates.

3. The apparatus of claim 1, wherein said first, second and third transformer cores are toroidal "C", "O" or "E" transformer cores or combinations thereof.

4. The apparatus of claim 1, wherein said first, second and third transformer cores are ferrite cores, laminated cores or powdered iron cores or combinations thereof.

5. The apparatus of claim 1, further comprising at least one mounting plate for mounting said electrically conducting elements, said at least one mounting plate attached to a container for said material.